

## PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

|   |  |  |  |                      |
|---|--|--|--|----------------------|
| Applicant's or agent's file reference<br>P3S2004389   |  | <b>FOR FURTHER ACTION</b>  |  | See Form PCT/PEA/416 |
| International application No.<br>PCT/JP2005/004737  |  | International filing date (day/month/year)<br>10.03.2005   | Priority date (day/month/year)<br>11.03.2004 |                      |
| International Patent Classification (IPC) or national classification and IPC<br>INV. F01N3/025 F01N9/00   |  |  |  |                      |
| Applicant<br>TOYOTA JIDOSHA KABUSHIKI KAISHA et al.   |  |  |  |                      |
| <p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> |  |  |  |                      |
| <p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>   |  |  |  |                      |
| Date of submission of the demand<br><br>05.01.2006  |  | Date of completion of this report<br><br>08.06.2006  |  |                      |
| Name and mailing address of the international preliminary examining authority:<br> European Patent Office - P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk - Pays Bas<br>Tel. +31 70 340 - 2040 Tx: 31 651 epo nl<br>Fax: +31 70 340 - 3016   |  | Authorized officer<br><br>Blanc, S<br><br>Telephone No. +31 70 340-4108<br> |  |                      |

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/JP2005/004737

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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
  - ☐ international search (under Rules 12.3(a) and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4(a))
  - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements**\* of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

**Description, Pages**

1-35 as originally filed

**Claims, Numbers**

1-16 as originally filed

**Drawings, Sheets**

1/9-9/9 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/JP2005/004737

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

|                               |             |      |
|-------------------------------|-------------|------|
| Novelty (N)                   | Yes: Claims | 1-16 |
|                               | No: Claims  |      |
| Inventive step (IS)           | Yes: Claims | 1-16 |
|                               | No: Claims  |      |
| Industrial applicability (IA) | Yes: Claims | 1-16 |
|                               | No: Claims  |      |

2. Citations and explanations (Rule 70.7):

**see separate sheet**

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

Reference is made to the following document:

D1: FR2774421

1. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (see pages 4-6 and figures 1 and 2):

an exhaust purifying apparatus for an internal combustion engine (M), wherein:

- an exhaust purifying mechanism (F) that is located in an exhaust passage (E) of the internal combustion engine (M), wherein the exhaust purifying mechanism traps particulate matter in exhaust gas;
- a fuel adding device for adding fuel to exhaust gas that passes through the exhaust purifying mechanism;
- a detecting section (11) that detects a pressure difference between a section upstream and a section downstream of the exhaust purifying mechanism;

The subject-matter of claim 1 differs from this known engine in that it further comprises

- a comparing section, wherein, **while the fuel adding device is adding fuel to exhaust gas**, the comparing section compares the pressure difference that is detected by the detecting section at a predetermined point in time with the pressure difference reference value that has been set in correspondence with the predetermined point in time; and
- a setting section, wherein, when the comparing section determines that the pressure difference exceeds the pressure difference reference value, the setting section sets the manner of adding fuel of the fuel adding device to **intermittent fuel addition**.

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

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2. The subject-matter of claim 1 is therefore new (Article 33(2) PCT).
3. The problem to be solved by the present invention may be regarded as optimising the regeneration of the particle filter.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) none of the cited prior art document give a hint that would lead the skilled man to develop a similar system where the fuel addition would be adapted to the regeneration conditions and during the regeneration. The regeneration system is based on the fact that when the fuel addition is continuous, the temperature inside the filter is uneven and higher on the downstream side and when the fuel addition is intermittent, the temperature inside the filter is even.

4. For the same reasons, the independent claim 16 (method claim based on claim 1) is also new and inventive.
5. Claims 2-15 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.